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Integrated Automatic Flood Warning and Alert System using IOT

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ABSTRACT: Now a days the climate conditions of Indian country unpredictable because of this reason the occurrence of flood are the overflow of rivers, drainage or dam a heavy rainfall. The flood can occurs at any time in any year. The occurrence of flood is very hazards for live things. Because of the flood so many people are lost their homes, farms due to this people have to face lots of problems. The local government has a unit through which it provides the information about flood to the computer. But this information is not reach to all the areas. For that we creating project called integrated automatic flood warning System using IOT.[1]The objective of this project is to flood detection and controller using IOT and embedded technology. To detect a flood the system observes various natural factors, which includes Rain level ,water level and flow level. To detect a flood the system observes various natural factors, which includes humidity, temperature, and water level and flow level. To collect data of mentioned natural factors the system consist of different sensors which collects data for individual parameters.. The water level is always under observation by a float sensor, which works by opening and closing circuits (dry contacts) as water levels rise and fall. It normally rest in the closed position, meaning the circuit is incomplete and no electricity is passing through the wires yet. Once the water level drops below a predetermined point, the circuit completes itself and sends electricity through the completed circuit to trigger an alarm. The flow sensor on the system keeps eye on the flow of water.

KEYWORDS: Flood Warning **,** Iot , Alert System Using Iot ,Water level sensor , Rain flow sensor, Flow sensor ,Integrated Automatic Flood Warning.

I. INTRODUCTION

Flooding is one of the major disasters occurring in various parts of the world. The model is very much useful to monitor the water level variations in rivers, dams, reservoirs and the monitored values regularly. C.Nagarajan et al [3,5,8] has studies stored in the web server which is useful to send flood alerts to corresponding authority for proper action and the same can be viewed through the web. This research investigates the use of wireless sensor network (WSN) for monitoring of river and flood conditions. stored in the web server which is useful to send flood alerts to corresponding authority for proper action and the same can be viewed through the web. This research investigates the use of wireless sensor network (WSN) for monitoring of river and flood conditions. The wireless sensor network system can also be used for real-time monitoring of water conditions like water flow level and precipitation levels. The model was developed and engaged in monitoring flood.

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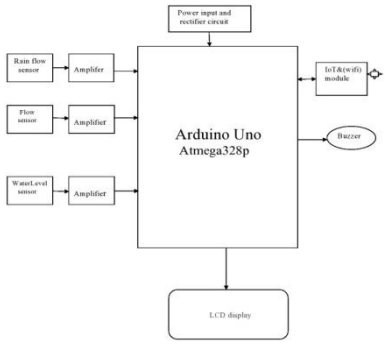
A. BLOCK DIAGRAM



B. WORKING AND OPERATION

The Flood warning system will also have a prediction happening in the catchment of drainage river, dam rain gauge will be used to track the volume of the rainfall at the catchment and the output of this rain
gauge will be used to calculate the expected rise in water level at the reservoir of dam are river This expected volume of water will be released from the reservoir with low velocity which will prevent the flood like situations. During this event, people around the catchment of the dam or river will be warned about the situation at the earliest so that rehabilitation steps can be taken. In Flow sensor controlled om the water level and any choking of the drainage pipe and increase of the water level then drainage water outcome of the living home side .Monitring of the water level on will be increase of flow intimate of alert of the system.Rain flow sensor working on the measuring on flow of rain flow in hour per heavey and low flow to measuring in the rain sensor in output of rain sensor input of controller in the programming of the method and display of value.

The Working of Proposed system is to detect a flood the system observes various natural factors, which includes, water level, flow level and Rain level. To collect data of mentioned natural factors the system consist of different sensors which collects data for individual parameters.. The water level is always under observation by a float sensor, which works by opening and closing circuits (dry contacts) as water levels rise and fall. It normally rest in the closed position, meaning the circuit is incomplete and no electricity is passing through the wires yet. Once the water level drops below a predetermined point, the circuit completes itself and sends electricity through the completed circuit to trigger an alarm. The flow sensor on the system keeps eye on the flow of water. The water flow sensor consists of a plastic valve body, a water rotor, and a hall-effect sensor. When water flows through the rotor, rotor rolls.Its speed changes with different rate of flow. The rain sensor is used to sense a Rain level. All the sensors are connected to Arduino UNO, which processes and saves data. The system has WIFI feature, which is useful to access the system and its data over IOT.[4]

C. Internet of Things (IoT) Architecture for Flood Data Management

Flood disaster is one of the most frequent natural disasters that occur all around the world. For flood prone areas or countries, flood management is an essential part of their governance. In recent years, there has been an increasing use of Information Technology (IT) to facilitate in flood management. For example, the use of sensors to measure hydrological data such as water level and then transmitting that data over the network has become a common practice in many parts of the world. The same goes with the measurement and transmission of geological and meteorological data related to flood. When combined together, this infrastructure forms an Internet of Things (IoT). This paper provides a review on the research works that utilize IoT for flood data management. The paper then proposed an IoT architecture for flood data management that can serve as the basis for the implementation of IoT infrastructure that collect, transmit and manage flood related data.[7]

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D. A Real Time Solution to Flood Monitoring System using IoT and Wireless Sensor Networks

There are some places that are more prone to floodingthan other placess, the implementation of flood alert systems near any major water area or body
of water provides critical information that can protect property and save lives. Of course, the most effective flood warning methods are very costly and requires high maintenance and also requires highly qualified employee to operate it. Nowadays, there is no idea about when flood will occur so there is need to prewar people who are near the flooded area. Hence we are design this system to inform the people about the upcoming flood through notification and alert messages. For that purpose we are going to use some sensors which will helpful to give information about the flood. As well as we are going to give all safe places near the user location where user can migrate. Always we are using map for trace safe location. This system provides actual implementation to organizations, communities and individuals interested in establishing and operating flood monitoring and warning systems.[6]

E. Computer Vision and IoT-Based Sensors in Flood Monitoring and Mapping

Floods are amongst the most common and devastating of all natural hazards. The alarming number of flood-related deaths and financial losses suffered annually across the world call for improved response to flood risks. Interestingly, the last decade has presented great opportunities with a series of scholarly activities exploring how camera images and wireless sensor data from Internet-of-Things (IoT) networks can improve flood management. This paper presents a systematic review of the literature regarding IoT-based sensors and computer vision applications in flood monitoring and mapping. The paper contributes by highlighting the main computer vision techniques and IoT sensor approaches utilised in the literature for real-time flood monitoring, flood modelling, mapping and early warning systems including the estimation of water level. The paper further contributes by providing recommendations for future research. In particular, the study recommends ways in which computer vision and IoT sensor techniques can be harnessed to better monitor and manage coastal lagoons—an aspect that is under-explored in the literature.

II. INTERNET OF THINGS (IOT)

The Internet of things (IoT) is the network of physical devices, vehicles, home appliances, and other items embedded with electronics, software, sensors, actuators, and connectivity which enables these things to connect, collect and exchange data. IoT involves extending Internet connectivity beyond standard devices, such as desktops, laptops, smartphones and tablets, to any range of traditionally dumb or non-internet-enabled physical devices and everyday objects. Embedded with technology, these devices can communicate and interact over the Internet, and they can be remotely monitored and controlled. With the arrival of driverless vehicles, a branch of IoT, i.e. the Internet of Vehicle starts to gain more attention.

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A. APPLICATIONS

The extensive set of applications for IoT devices is aften divided into consumer, commercial, industrial, and infrastructure spaces

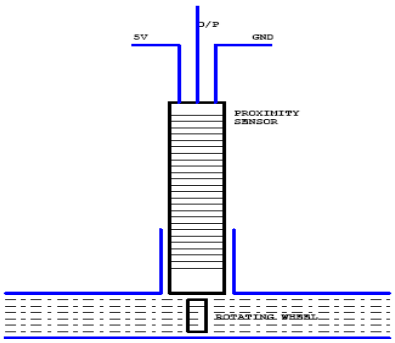
B. WIFI MODULE

AWi-Fi-enabled device, such as a personalcomputer, video game console, smartphone or digital audio player, can connect to the Internet when within range of a wirelessnetwork connected to the Internet. The coverage of one or more (interconnected)access points called hotspots comprises an area as small as a few rooms or as large as many square miles. Coverage in the larger area may depend on a group of access points with overlapping coverage.[5]

III. WATER FLOW SENSOR

A flow sensor is a device for sensing the rate of fluid flow. Typically a flow sensor is the sensing element used in a flow meter, or flow logger, to record the flow of fluids. As is true for all sensors, absolute accuracy of a measurement requires functionality for calibration.The wheel rotation is monitoured by the proximity sensor. The proximity sensor is delivered the output in the form of pulse which is given to microcontroller.

A water clock or clepsydra is any timekeeper operated by means of a regulated flow of liquid into (inflow type) or out from (outflow type) a vessel where it is measure. Here the rotating wheel is fiexed in the inside pipe where the waterflow has to measure. When the water is flowing with pressure, the wheel is rotating.



IV. RAIN DETECTION

Rain is a form of precipitation which forms when separate drops of water fall to the Earth's surface from clouds. Not all rain reaches the surface, however; some evaporates while falling through dry air. When none of it reaches the ground, it is called virga, a phenomenon often seen in hot, dry desert regions. The scientific explanation of how rain forms and falls is called the Bergeron process.Rain plays a role in the hydrologic cycle in which moisture from the

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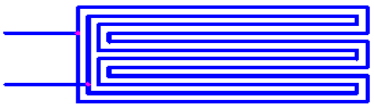
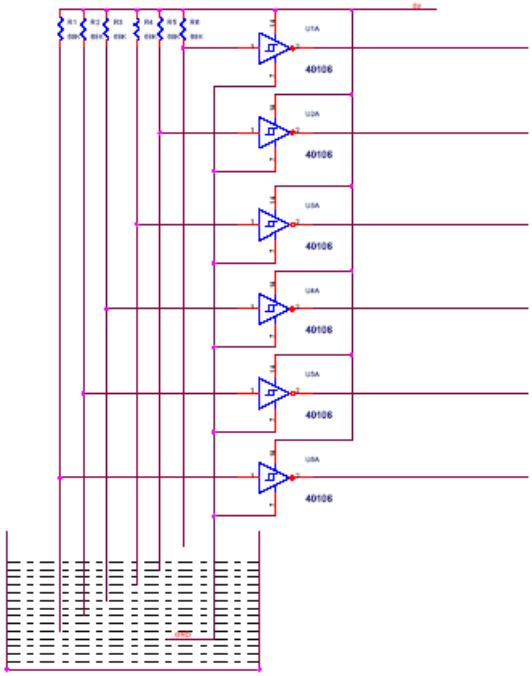
oceans evaporates, condenses into clouds, precipitates back to earth, and eventually returns to the ocean via streams and rivers to repeat the cycle again. There is also a small amount of water vapor that respires from plants and evaporates to join other water molecules in condensing into clouds.The amount of rainfall is
measured using a rain gauge. It is expressed as the depth of water that collects on a flat surface, and is routinely measured with an accurary up to 0.1 mm or 0.01 in. It is sometimes expressed in liters per square meter (1 liter/m² = 1 mm). This circuit is designed with two lines are tracked with very short distance. When rain drops falls on this circuit, the track may become short circuit. It gives the corresponding signal to related circuit in order to find the rain fall.[2]



In this circuit the probe is used to measure the water level. All the probe leads are pulled high through the resistors. They are placed in the differential high level. Then the probe outputs are given to 40106 hex schimitt trigger inverter. Initially when the tank is full all the probe leads are touched with water. So the probe leads become zero which are inverted to high through hex inverter. When the water level is decreased gradually, the untouched probe become high which are inverted to low by the hex inverter. Then the corresponding output signal is given to microcontroller or other circuit in order to find the water level.[3]



V. CONCLUSION

As India faced recent devastating flood in Kerala, there arise a need of efficient flood monitoring systems. Flood forecasting and the issuing of flood warnings are effective ways to reduce damage. The proposed system will be efficient because it has better coordination of monitoring, communication and transmission technologies which are adaptable to background condition. The proposed system also ensures increased accessibility for assessment of emergency situations and enhances effectiveness and
efficiency in responding to catastrophic incidents. In summary, the proposed system would be beneficial to the community for decision making and evacuation planning purposes.

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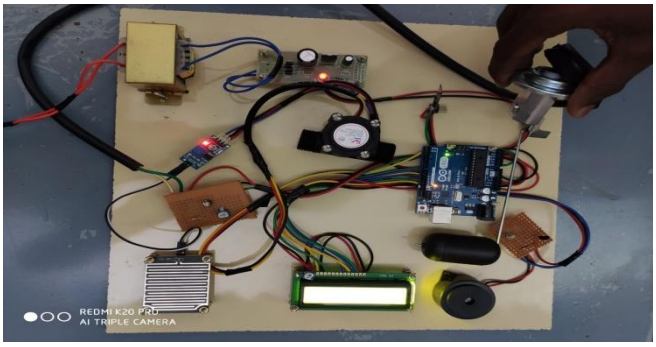

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